

REMARKS/ARGUMENTS

Claims 1-23 are pending in the application. Claims 1, 10, 19, 22, and 23 have been amended. Support for the claims can be found in the specification as originally filed. No new matter has been introduced by virtue of these amendments.

Claims 1-5, 7-15, 18, and 23 were rejected under 35 U.S.C. §103(a) as being obvious over Nakamura et al. (U.S. Patent Publication No. 2002/0078296) in view of DeMargerie et al. (U.S. Patent No. 6,859,865). These claim rejections are overcome as follows.

Claim 1 substantively recites in part:

1. "first and second primary storage subsystems,"
2. an "intermediate storage subsystem coupled to the first and second primary storage subsystems and configured to synchronously receive the write data from the first and second primary storage subsystems" and
3. "first and second secondary storage subsystems coupled to the intermediate storage subsystem and configured to asynchronously receive the write data from the intermediate storage subsystem."

Independent claims 10, 19, 22, and 23 have been similarly amended.

The examiner identified Nakamura's main center (101, Fig. 1) as corresponding to the recited "intermediate storage subsystem" and identified Nakamura's S-Vols 111 as the recited "first and secondary storage subsystems."

Claim 1 calls for primary storage systems, an intermediate storage subsystem, and secondary storage subsystems; this recited arrangement has three data centers, where the primary storage sends data to the intermediate storage and the intermediate storage in turn sends data to the secondary storage. The examiner acknowledged that Nakamura does not show the recited "first and second primary storage subsystems" to which the intermediate storage subsystem is coupled, and relied on DeMargerie for teaching the missing primary storage subsystems. The examiner asserted that it would be obvious to add DeMargerie's storage devices 22a and 22b as "primary storage subsystems," explaining DeMargerie's synchronous comm. link 16 (Fig. 1) between their storage devices 22a/22b and 32a/32b as the motivation to do so.

However, the examiner has not pointed to any teaching in either reference that suggests coupling DeMargerie's storage devices 22a/22b to Nakamura's main center 101 as

“primary storage subsystems.” In fact, given that Nakamura clearly shows P-Vols 108 and S-Vols 111, the logical modification would be to incorporate DeMargerie’s synchronous comm. link 16 between Nakamura’s P-Vols 108 and S-Vols 111.

Respectfully, the examiner seems to have ignored the clear teachings of Nakamura and DeMargerie to assert an improper combination of references to support his Section 103 rejection of the claims. In particular, neither reference shows or even suggests the three data center arrangement recited in the pending claims. Instead, the examiner appears to have used the three data center arrangement recited in the pending claims and taught in the pending specification to motivate his proposed modification of Nakamura whereby DeMargerie’s storage devices (either 22a/22b or 32a/32b) are connected to Nakamura’s Fig. 1 to arrive at the three data center arrangement of the pending claims. Since the pending claims and the specification are the only teachings that might suggest the examiner’s proposed combination of references, the use of such teachings from the pending application constitutes the improper use of hindsight knowledge to support a Section 103 rejection. Consequently, the Section 103 rejection of the claims should be withdrawn for at least this reason.

Claim 1 further recites that the primary storage subsystem and the intermediate storage subsystem communicate synchronously, and that the intermediate storage subsystem and the secondary storage subsystem communicate asynchronously.

Nakamura teaches asynchronous communication between P-Vols 108 and S-Vols 111. DeMargerie teaches synchronous communication between storage devices 22a/22b and storage devices 32a/32b. The examiner proposed to combine the references in a way that results in DeMargerie’s storage devices (either 22a/22b or 32a/32b) synchronously communicate with Nakamura’s P-Vols 108 (which the examiner characterizes as intermediate storage). However, Nakamura’s P-Vols in no way suggest *receiving* data from another storage subsystem. In fact, Nakamura clearly shows that the P-Vols provide storage capability for host unit 105, receiving data for storage from the host. Nakamura clearly shows the P-Vols sending data to the S-Vols to duplicate the data. Thus, even if the P-Vols 108 are referred to as “intermediate storage”, simply calling the P-Vols as intermediate storage does not make it so.

Claim 1 clearly recites an "intermediate storage subsystem coupled to the first and second primary storage subsystems and configured to synchronously receive the write data from the first and second primary storage subsystems [and] first and second secondary storage subsystems coupled to the intermediate storage subsystem." While Nakamura clearly shows that the P-Vols are coupled to the S-Vols, Nakamura does not at all suggest that the P-Vols 108 are coupled to primary storage subsystems. Contrary to the examiner's assertion, DeMargerie's teaching of synchronous comm. link 16 does not result in attaching their storage devices (either 22a/22b or 32a/32b). At best, DeMargie's synchronous comm. link 16 would replace Nakamura's asynchronous communication link between P-Vols 108 and S-Vols 111. The advantages of DeMargerie's synchronous comm. link asserted by the examiner does not suggest the recited three data center arrangement where a primary storage synchronously sends write data to the intermediate storage, and where the intermediate storage asynchronously send the data to the secondary storage.

CONCLUSION

In view of the foregoing, Applicant believes all claims now pending in this Application are in condition for allowance and an action to that end is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400.

Respectfully submitted,


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